Shoulder pain relieved by abduction

A sign of cervical radicular compression

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Extra-articular lesions should be considered in the differential diagnosis of a painful shoulder. Relief of this pain by lifting the arm above the head is known as the shoulder abduction relief (SAR) sign, or shoulder abduction test.[1] This antalgic position might be the only clue to serious radicular compressive disease of the cervical area, despite the absence of cervical symptoms. We present a case report and discuss the literature.

Case report

A 71-year-old man visited his family physician because of pain in his right shoulder for the past week. The pain was intense and disrupted his sleep. It was partially relieved by lifting his right arm over his head. He denied having any recent trauma. Physical examination revealed a pain-related limitation of all movements of the shoulder and general tenderness of the shoulder and the suprascapular area.

Because analgesics did not relieve the pain, he was referred on the fourth day to an orthopedic surgeon in the emergency room of the local hospital. He was released from the emergency room with a provisional diagnosis of "suspected rotator cuff rupture" and scheduled for a diagnostic ultrasound examination of his shoulder. No special comment was made by the orthopedist about the antalgic position. While waiting for the ultrasound, the patient returned twice to his physician's office and was treated with nonsteroidal anti-inflammatory drugs.

Three weeks later, the patient was admitted urgently to the department of orthopedic surgery. He developed a sudden weakness of his upper limbs that rapidly deteriorated into quadriplegia. A computed tomography scan, performed shortly after admission, revealed a space-occupying lesion of the upper mediastinum and the sixth cervical vertebra. He died the same night.

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Can Fam Physician 1997;43:511-512.

Discussion

Should the antalgic position assumed by this patient have given us a clue to the final diagnosis? Davidson et al,[1] working in a tertiary care setting (neurosurgery and orthopedic departments), saw more than 200 patients in 2 years with pain in the neck, shoulder, and arm. They found that 7.5% of these patients experienced pain relief with abduction of the shoulder and that all of them had extradural compressive cervical radiculopathies (spondylosis, extruded free disk fragments, and bulging disks).

Beatty et al[2] reported three cases in which arm abduction was a helpful clinical sign of ruptured cervical disk. Viikari-Juntura et al[3] studied 69 patients sent to a neurosurgery department for cervical myelography, during a 3-year period. They tested the validity of shoulder abduction as a test for diagnosing root compression in cervical disk disease. According to their findings, the test had high specificity but low sensitivity. Pain relief obtained with shoulder abduction is due to the large reduction of tension at the nerve root as shown by Farmer and Wisneski.[4]

Clinicians should be aware that pain in the shoulder might signal lesions that are not intrinsic to the shoulder. Examples of pain referred from distant sites include pleurisy, heart disease, diaphragmatic irritation, and biliary tract diseases. The pain might also originate in the area extending from the spinal cord to the axillary border of the scapula, as in spinal cord tumours, extruded intervertebral disks, foraminal root compression syndromes, scalene and cervical rib syndromes, and clavipectoral compression syndromes. Clinicians might be unaware that SAR exists.

Physicians may use SAR as a passive diagnostic sign (suspecting cervical disease in patients with shoulder pain who assume this position); an active diagnostic sign, obtaining pain relief by actively lifting the arm over the head (the "straight leg raising test of the arm")[5]; or an educational tool in the

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conservative management of patients suffering from cervical radiculopathy affecting the lower cervical roots (by instructing patients to assume this position in order to relieve pain).[6]

Conclusion

In the case presented, the SAR was the initial clinical clue to the malignant tumour of the mediastinum that spread to the cervical spine. The primary care physician, his close peers, and the orthopedic surgeon failed to see in the patient's antalgic position a sign of specific disease.

Statistical data from the literature are insufficient to show that the presence of this sign warrants extensive (and expensive) workup. However, the sign seems to be quite uncommon, making the number of workups small, and therefore advisable.

Because this sign has been infrequently discussed in the literature, we wish to alert primary care physicians to its diagnostic value in pointing to possible cervical disease in patients complaining of shoulder pain. Although the SAR might be rare, it seems to be an easily distinguishable "red flag" for recognizing serious cervical disease.

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